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Analyzing Circular Economy Aspects in ISO Type I Ecolabelling Criteria

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Keywords: Ecolabel; Circular Economy; Durability; Reparability; Upgradability; Reusability.

Abstract: In recent years, a trend that moves towards the concept and development of circular economy models has appeared, focusing on ensuring that the values of products, materials and resources remains in the economy for as long as possible and also on minimising waste generation. This means optimising resource yields by circulating products, components and materials for the best utility at all times. For this purpose, the European Commission introduced a series of measures that cover the whole life cycle of products and materials to increase the value of products by promoting their longer use so as to minimise the amount of waste by designing for repair, remanufacturing, durability, refurbishing or recycling, among others. ISO-type I environmental programmes play an important role in this context as they are intended to educate and raise consumer awareness of the impacts of a product by identifying its best environmental performance during its life cycle. This encourages both producers and providers to offer environmentally friendlier choices and, in turn, compatible with the circular economy concept. With this approach, this preliminary study analyses how circular economy aspects are promoted by different ISO-type I environmental programmes. To do so, the ecolabel criteria proposed for each product category in different ISO-type I environmental programmes were reviewed to identify which circular aspects related to the life extension are already considered and in which terms. It was also determined how specific circular aspects can be further strengthened in some product groups that do not currently integrate them.

Introduction

The Circular Economy concept is focused on ensuring that the values of products, materials and resources remained in economy for as long as possible by circulating products, components and materials for their best utility at all times. With this approach, a series of measures that cover the whole life cycle of products and materials have been introduced (COM 614, 2015; COM 33, 2017). They are focused on minimising the amount of generated waste by applying product design strategies that facilitates its repair, remanufacturing, longer durability, refurbishing or recycling. These strategies has also been prioritised by the Directive 2008/98/EC, which presents a waste management hierarchy prioritising “reuse” over other waste management approaches such as recycling or other recovery alternatives.

The demand of these products depends on their recognition by consumers, who should be able to identify them and understand the requirements that they incorporate. With this

approach, ISO-type I environmental programmes (ISO 14024, 2018) identify products or services proven environmentally preferable by satisfying specific environmental criteria through the use of a logo indicating the corresponding ISO-type program. The objective of this ISO-type I environmental label is to contribute to a reduction in the environmental impacts associated with products by guiding consumer choices towards product and service options that have a better environmental performance, encouraging both producers and providers to offer environmentally friendlier choices.

The study of the relationship between ecolabel criteria and circular aspects is incipient in the literature. Suikkanen and Nissinen (2017) analyzed some ISO-type I environmental programmes (Nordic Swan Ecolabel and the EU Ecolabel) to determine how the product ecolabel criteria promote the extended product service. With this approach, this study analyses circular aspects integrated in different ecolabel criteria from different ISO-type I environmental

programmes in order to identify which circular aspects are already considered and in which terms.

Methodology

Considering that the study aims at analysing how circular aspects are promoted by different ISO-type I environmental programmes, Figure 1 shows the methodology followed to achieve this objective.

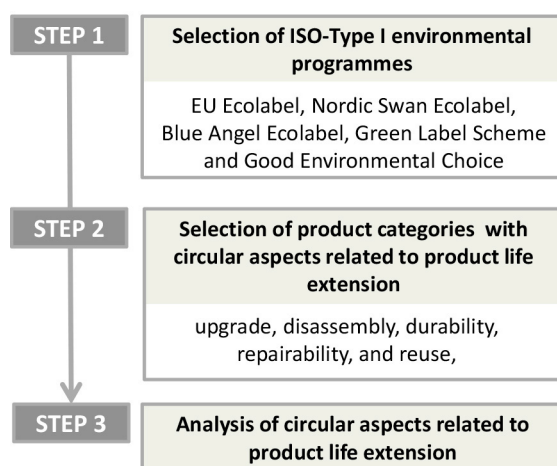


Figure 1. Methodology.

The starting point of the study (step 1) was the selection of different ISO-type I environmental programmes. Secondly (step 2), the ecolabel criteria for different product categories of each ISO-Type I program was analysed in order to select those including criteria related to circular aspects. The next step (step 3) addressed a content analysis, for each selected product category, of the ecolabel criteria directly related to circular aspects with focus on product life extension: upgrade, disassembly, durability, repairability and reuse (COM 773, 2016; COM 614, 2015; COM 33, 2017). Finally, the study results (step 4) show an analysis of the product categories and the ISO-type I environmental programmes that incorporate these specific circular aspects related to life extension.

This information will be useful for proposing guidelines about how to integrate circular aspects related to life extension into the product categories that do not currently consider them.

Results

This section shows the results obtained after applying the described above methodology.

Step 1. Selection of ISO-Type I environmental programmes

Different ISO-type I environmental programmes were selected. The guideline for this selection was to cover a worldwide geographic perspective and that ecolabel criteria were freely available in English, through Global Ecolabelling Network (GEN, 2019). The following five ISO-type I environmental programmes were selected: EU Ecolabel (European Union), Nordic Swan Ecolabel (Nordic countries), The Blue Angel EcoLabel (Germany), Green Label Scheme (Hong Kong) and Good Environmental Choice Australia-GECA (Australia).

Figure 2 shows the logo of the ISO-type I environmental programmes reviewed.



Figure 2. Logos of the ISO-type I programmes reviewed.

Step 2. Selection of product categories with circular aspects related to product life extension

After the review of the ecolabel criteria from the different product categories belonging to the five ISO-Type I environmental programmes described above, criteria from 81 product categories were analysed at this preliminary stage of the study. The distribution among the five ISO-Type I environmental programmes is shown in Figure 3.

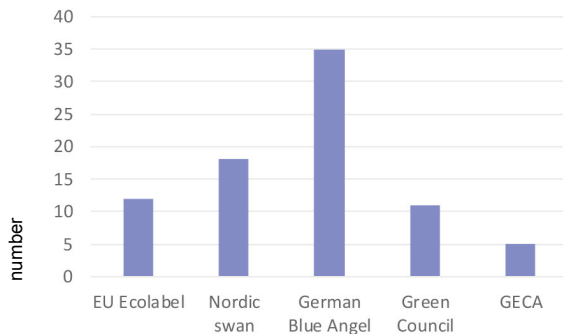


Figure 3. Number of product categories analysed from each ISO-Type I environmental program.

The analysed product categories were aggregated into the 36 product groups reported in Table 1, in order to homogenize nomenclature and simplify the presentation of results.

Step 3. Analysis of circular aspects related to product life extension included in the ecolabel criteria

A total of 26 circular aspects related to life extension were identified in the criteria defined for these 81 product categories analysed.

These circular aspects were also aggregated according to their content into the following groups:

- **Upgradability.** It contains aspects related to the requirement of ensuring upgradeability or reconditioning of the product, the capability of products to integrate components easily accessible and exchangeable using universal tools, etc.
- **Disassembly.** It contains aspects related to the capability of the product to be disassembled, including requirements for joints between materials, components or parts, etc.
- **Durability.** It contains aspects related to requirements such as colour retention, resistance, etc., the commercial guarantee to ensure that the product will function for a certain number of years, as well as provision of spare parts. Other aspects are related to the minimum number of hours of operation or to the incorporation of mechanisms to facilitate the dosage of the product.
- **Reparability.** It contains aspects related to the design for repair by designing components easily accessible and exchangeable using universal tools.

- **Reusability.** It contains aspects related to the reuse of components by refilling their content or by establishing a minimum of reused materials into its design.

Table 1 shows the extent to which each ISO-Type I environmental program include the described life extension aspects in the 81 product categories reviewed.

	ISO-TYPE I PROGRAM					ASPECT				
	ECOLABEL	NORDIC SWAN	BLUE ANGEL	GREEN COUNCIL	GECA	Disassembly	Durability	Reparability	Reusability	Upgradability
Product Group										
Furniture (general)	o	o	o	o	o	.	.			
Office furniture		o	o							.
Bedroom furniture, including bed mattresses	o	o	o	o	o	.	.			
Kitchen furniture, including cooker hoods			o			.	.			.
Living room furniture			o							.
Carpeting Modular				o	o	.	.			.
Saunas			o							.
Windows & exterior doors		o								.
Building chemicals		o								.
Chemical building products		o								.
Indoor and outdoor paints and varnishes	o	o				.	.			.
Floor coverings		o			o					.
Panel boards and slatted frames			o		o	.	.			.
Flushing toilets and urinals	o									.
Sanitary tap water	o									.
Heat pumps	o									.
Imaging equipment	o	o				.	.			.
Televisions and projectors	o	o	o			.	.	.	.	.
Personal computers, notebook & tablets	o	o	o	o		.	.	.	.	.
Monitors and screens			o	o		.	.	.	.	.
Copying, printers & fax machines		o	o			.	.	.	.	.
Ink and Toner Cartridges		o	o			.	.	.	.	.
Phones & telephone systems			o			.	.	.	.	.
Lamps (fluorescent & LED)				o		.	.			.
Pen				o		.	.			.
Small EEE (coffe machine, hair dryers, kettles, toaster etc.)		o	o			.	.	.	.	.
White large EEE		o	o			.	.			.
Stationary air conditioners			o			.	.	.		.
Disposable for foods	o					.				.
Compost bins	o									.
Shampoos, shower gels and cosmetic products	o	o	o	o				.	.	.
Purpose cleaners, glass, laundry... cleaners			o					.		.
Textiles (clothes and towels)	o	o						.		.
Footwear products	o	o						.		.
Toys		o	o			.	.			.
Playground equipment		o				.	.			.

Table 1. Relationship among product groups reviewed with ISO-Type I environmental program and life extension aspect.

Conclusions

This preliminary results show that durability aspects are already being included in the ecolabel criteria defined for most of the product categories belonging to the ISO-Type I environmental programmes, mainly for EU Ecolabel, Nordic Swan and German Blue Angel. However, for GECA and Green Council program, disassembly aspects are more generally included. It has to be taken into account that disassembly aspects integrate all

requirements related to tools, joints and design considerations needed to facilitate the dismantling of the product, influencing as well into their reparability, reusability and upgradability.

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